ELARA ST photobioreactor series is ideal for phototrophic organisms such as moss, microalgae, bacteria and plant cells. The light spectrum and intensity is adjustable 0-100% up to 3000 µmol(photon)/m².

**WHY TO INVEST IN THIS PRODUCT**

**INNOVATIVE SOLUTION**
- to improve your microalgae culture

**FLEXIBILITY**
- High power LED lighting, spectrum selectable and dimmable 0-100%
- The fully removable light module allows to use Elara as a traditional fermenter

**ELARA ST typical applications includes the following:**
- Education & Basic research
- Scale-up and scale-down studies
- Process development and optimization

**ELARA ST can be used for:**
- Algae
- Phototrophic bacteria
- Plant cells

Stirred autoclavable photobioreactors
**Benefits**

- **Automatic and manual control of RBW light intensity and circadian cycle simulation**

- **Powerful/ Accurate brushless motor, from 1 to 2000 RPM.**
  - Online absorbed Torques (Nm) and Power (W) measurements obtaining an indirect density indication of the culture broth.

- **Modbus Digital sensors**

- **LEDA safe sterile sampling system**
  - The needle free connector is designed to reduce the risk of contamination during sampling.
  - The sterile combination of a syringe (3-5-10-30 ml) and a non return valve guarantees the sterility after sampling until the next use.

- **Safety: pressure relief valve included in each unit.**

- **Compact and modular PCS**

- **N.4 assignable Watson Marlow pumps in entry level.**

- **24” touch HMI.**
  - OD, dCO2, weight, thermobox, peristaltic pumps

- **Fully removable and cleanable jacket**

- **Different gas mixing strategies with up to 5 TMFC.**

- **OD, dCO2, weight, thermobox, peristaltic pumps**
Solaris controlling software offers a simply laid out, yet powerful platform for experimental design planning and process control. The graphical user interface enables the intuitive selection and adjustment of control functions. Extracted data is compatible with Window Excel but, in addition, Solaris offers a platform where fermentation data can be easily exported in real time and thus managed. This software is included in the supply and can be installed on an unlimited number of the client’s PC or laptops.

**USER-FRIENDLY SOFTWARE**

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**Do it parallel: smarter, faster**

Leonardo allows intuitive and time-saving parallel operations. Up to 24 independent fermentations/cultivations can be carried out simultaneously.

**Do it wireless!**

Increase mobility: users have the option to access the platform remotely via PC, tablet, phone. Remote access is multi-level password protected.

Modbus Digital sensors

*Why a digital sensor?*

Digital sensors (including Cell Density products) have been integrated to the Solaris PCS and Leonardo controlling software, giving the user many benefits over traditional analog sensor outputs. Such benefits include a robust communication protocol not susceptible to signal loss, in-software sensor diagnostic information, parallel calibration/batch calibrations and more.

**GAS MIXING**

Hardware and software adaptability are key to enable the best aeration strategy for each process. Thermal mass flow controllers (TMFC) allow precise flow rate control of individual gases. Up to 5 TMFC’s can be configured within each PCS cube and integrated to the controlling software. The powerful software and control platform allows precise cascade adjustment of multiple parameters to manage gas transfer, OTR, kLa, etc.

- n.1 TMFC included in “entry” level system; additional available as optional.
- Various agitator and baffle designs available
- Automatic gas mixing algorithms
- Toro, sintered and other spargers available

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**Data sheet**

**Vessel**
- Photobioreactor type: Stirred
- Total Volume (liters): 4.00
- Ratio D/H: 1:3.0
- Max. Working Volume (liters): 0.60
- Max. Working Volume (liters): 3.00
- Max. temperature: 135 °C
- Operating pressure: ≤ 0.5 bar

**Ports**
- n.1 port, Gas Sparger Input
- n.1 port, Gas overlay
- n.1 port, Harvesting system
- n.1 port, Sampling system
- n.1 port, Temperature sensor
- n.1 port, multi addition (4) needle free connectors
- n.5 ports, spares probes
- n.1 port, single addition needle free connector
- n.1 port, Agitation Group

**Sensors length (mm)**
- pH: 325
- dO₂: 325

**Dimensions for autoclave (with Condenser)**
- Height (mm): 655
- Diameter (mm): 225

**Stirring**
- Drive: Brushless Motor, Direct Assembly, 1-2000 rpm (bacterial), 1-500 (cell cultures)
- Power (PN): 266 W
- Impellers: Select from: Rushtons impellers, Marine Impellers, Pitched blade

**Thermoregulation**
- Control: PID Control - Accuracy 0.1 °C
- Thermostatic control: Thermobox (flat) / water jacketed with electric heaters (stirred vessel)

**Gas Control & Gas Mixing**
- Sparger and overlay Gas Control: TMFC
- Gas Mixing (Ar[CO2,O2,N2]): n.1 TMFC + n. solenoid valves or n° of TMFC
- Aeration system: Toro ring or sintered (microbubbling) sparger with 0.2 µm filter
- Exhaust: Condenser and 0.2 µm filter

**Peristaltic Pumps**
- n.4 Watson Marlow type 114, fixed speed, max. 60 rpm, volumetric flow 0.5-5.1 ml/min, function assignable from software
- (optional) Watson Marlow type 313 FDM/D, max. speed 350 rpm, volumetric flow 1.5-1750 ml/min, function assignable from software

**Controls**

**Temperature**
- Sensor: PT100
- Control system: Measuring resident in Leonardo 3.0 software
- Control range: 0 - 150°C

**pH**
- Sensor: Digital sensor
- Control system: Measuring resident in Leonardo 3.0 software
- Control range: 0 - 14

**dO₂**
- Sensor: Digital Optical sensor
- Control system: Measuring resident in Leonardo 3.0 software
- Control range: 0.05 - 300% air saturation

**dCO₂**
- Sensor: Analog sensor
- Control system: Measuring resident in Leonardo 3.0 software
- Control range: 0,00-200% saturation

**Conductivity**
- Sensor: Digital sensor
- Control system: Measuring resident in Leonardo 3.0 software
- Control range: 1 - 3000 µS/cm

**Weight**
- Sensor: Digital Balance
- Control: Measuring resident in Leonardo 3.0 software

**Peristaltic pumps**
- WM 114: 10-60 rpm
- WM 313 FDM/D: 45-350 rpm

**Chiller**
- Optionally ELARA can be equipped with a chiller for heat removal from your culture minimizing lab water usage
- Using this system you don't need a water supply line in your lab
- Cost-effective cooling of fermenters
- Easy operation
- Refrigerant level monitoring

**Chiller data sheet**
- Working temperature range: -10°C / +40°C
- Temperature stability: ±0.5
- Power consumption: 0.7 kW
- Filling volume range: 2-8 L
- Pump pressure max: 10-15 bar

**INTEGRATED IN THE PCS**

**Weight**
- Sensor: Digital Balance
- Control: Measuring resident in Leonardo 3.0 software